DISEASES OF EXTERNAL EAR

LEARNING OBJECTIVE:

1. Recognize the clinical manifestation of diseases of External Ear and their basic management.
2. Knowledge of method of removal of wax, fungus and foreign body from ear.
3. When to refer the patients to the concerned specialty.

ANATOMY OF EXTERNAL EAR

PINNA

- Single elastic cartilage.
- Covered by skin.
- Continuous medially with external auditory meatus.
- Innervation:
  - Auriculotemporal nerve (V-M)
  - Great auricular nerve (C2,3)

ANATOMY OF EAR

Lymphatic drainage:
- Superficial parotid
- Mastoid retroauricular
- Deep and superficial cervical lymph nodes

Anatomy Of Ear: EAM

- S-shaped
- Outer 1/3:
  - Cartilaginous
  - Skin contains hair
    - Sebaceous and ceruminous glands
- Inner 2/3:
• bony
• narrower (isthmus)

• Relations of external auditory meatus
  — Front: TMJ
  — Behind: Mastoid air cell
  — Above: middle cranial fossa
  — Front and below: parotid gland

• Sensory nerve supply:
  — Greater auricular - (C2,C3)
  — Auricular – vagus X
  — Auriculotemporal - Vc Mandibular

• Vascular supply:
  — Auriculotemporal branch of superficial temporal artery, anteriorly
  — Branches of postauricular division of external carotid artery posteriorly.

• Lymphatic drainage:
  — Preauricular
  — Postauricular
  — Ext jugular lymph node
• Examination of Ear

- Inspection
- Palpation
- Otoscopy
- Binocular microscopy
- Hearing
  - Voice Test
  - Tuning forks
  - 512, 1024 and 2048 Hz
    - Rinne test
    - Weber test
    - ABC / Schwabach’s
- Vestibular Tests
- Cerebellar Tests
- Audiometric testing

• DISEASES OF EAR

- Symptoms of Ear Diseases
  - Otalgia
  - Otorrhea
  - Hearing Loss
  - Tinnitus
  - Vertigo

- DISEASES OF EXTERNAL EAR:

  • Otitis Externa

  DEFINITION:
  Inflammation of the skin lining of the External Ear
Classification:

**Localized**
- Diffuse

**INFECTIVE**
- Bacterial
  - Furuncle – Boil
  - Diffuse
- Fungal – Otomycosis
- Viral
  - Herpes – Simplex / Zoster
  - Influenzal

**Reactive**
- Eczematous

- Otitis Externa

Classification:
- Localised – Diffuse
– Dry

• Seborrhic Dermatitis
• Neuro – Dermatitis
• Allergic

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• Otitis Externa

• Pathophysiology:
  – Aggressive cleaning of the wax or retention of water
  – Microtrauma (cotton swabs, fingernails)

• Pathogens:
  – Staphylococcus (furuncle)
  – Pseudomonas Aeruginosa

• SSx:
  – pain, tragal tenderness, pruritus, edematous erythematous EAC, conductive hearing loss.

• RX:
  – suction cleaning
  – Ear drop
  – Analgesia
  – Antibiotic

• Otitis Externa

 Boil

• Inflammation of hair follicle
• Organism – Staph. Aureus.
• Site – Cartilaginous Meatus
• Single – Multiple – Recurrent

• Predisposing Factors
  – Scratching
  – Otorrhoea
  – Swimming – Infected Water
  – Instrumentation
    – Removal F.B / Wax

• Otitis Externa-Boil

 Clinical Features

• Pain
— Intense Throbbing
— On Jaw Movement
— Manipulation of Pinna

• Discharge
  — Purulent / Blood Stained

• Temperature
  — Mild 100° – 101° F

• Itching
  — Early

• Trismus
  — Boil on Anterior wall

• Deafness
  — Conductive – canal occluded

• Signs
  — Tenderness
    • Pinna / Tragus
    • Post – Aural
  — Swelling
    • In EAM – localised, pointing, rupture

• Cellulitis

• Adenitis

• Tymp. Memb. – Normal

• **Otitis Externa-Boil**

• D/D
  — Diffuse Otitis Externa
  — F.B. Ear
  — Herpes Lesion
  — Osteoma
  — Ac. O.M
  — Sagging Postero-Sup. meatal wall
  — Polypus
  — Mastoiditis
    • Preceding H/O O.M.
• Deafness
• T/M Abnormal
• Post Auricular groove persists
• Pain on deep pressure over mastoid
• X-ray Mastoid – Hazy / Sclerosed

• **Treatment**
  – Local
    • Aural Toilet
    • Local Heat
    • 10% Icthammol in glycerin wick
    • Antibiotic Ointment / Drops
  – General
    • Antibiotic
    • Analgesic
  – Surgical
    • *I.D. (linear incision)*

**Organisms**
- Aspergillus
- Candida

**Predisposing Factors**
- Moisture-
  • Summer
  • Rainy season
  • Ear drops
  • Swimmer
- Otorrhoea

**OTOMYCOSIS**

* C / F
• Pain
  — Mild /Severe
• Pruritis-Itching
• Tinnitus
• Deafness
  — Conductive - canal occluded
• Spores & Mycelia

TREATMENT
  — Removal-suction
  — Antifungal- ointment / drops
    • Nystatin-Candida
    • Conazoles- Aspergillus
  — Avoid water entry into ear

• FOREIGN BODY EAR

• Child / Mentally Retarded

• Sites
  — Cartilage- Bone Junction
  — Isthmus

• Types
  — Animate
  — Inanimate
    • Vegetable
    • Non Vegetable

S/S
  — Animate
    • Intense Irritation
• Extremely Painful
• May Perforate Ear Drum
  – Vegetable
    • Inert – Dry
    • Swells - Dampness
    • Sec O.E
    • Difficult Removal
  – Sharp Bleeding
    – Impacted – Cond. Deafness
• Management
  – Removal
    • Animate - First kill / Drown
      – Remove by Crocodile Forceps
    • Vegetable
      – Gentle Syringing-Alcoholic Sol.
      – Blunt Round Hook
    • Sharp F.B.
      – By Forceps
    • Pebble Stone
      – Syringe / Hook
• Management (cont.)
  – Under G.A
    • Child
    • Apprehensive Adult
    • Deep F.B.
    • Failed Attempts
    • Inflamed EAM
• Rarely F.B. enters Middle Ear, Antrum
  – Tympanotomy
  – Wax
• Normal Secretion of:
  • Ceruminous glands
• Pilosebaceous glands
  – Expelled in flakes
• Migration
• Jaw Movements

• Composition
  – Fatty Acids
  – IgA
  – Water
  – Desq. Epi. Cells
• Consistency
  – Soft White → Semi Solid → Golden Brown → Solid → Dark Brown

• Functions
  – Protective – Loud Sound
  – Insect Repellent Odour
  – F.B. Sticks
  – Antibacterial

• Plug Formation
  – Excessive Formation
  – Stiff Hairs
  – Desquamation
  – Exostoses
  – Stenosed Meatus

• Symptoms
  – Stiffness & Itching
  – Deafness
    • Sudden (when complete Occlusion)
    • Gradual
  – Pain – wax Swells
  – Tinnitus / Vertigo ---- touching T.M.
- Reflex Coughing

- **Treatment**
  - Removal
  - Syringing
  - Suction
  - Probe/Hook/Forceps
  - Hard Wax softened by:
    - Soda Bicarb. in Glycerin
    - Hydrogen Peroxide concentrated sol.
    - Olive Oil / Liquid Paraffin

- **SYRINGING**
  - **Indications**
    - Wax
    - F.B.
    - Fungus ?
    - Otorrhoea – Child
  - **Method**
    - Metallic Syringe 50 – 100 C.C.
    - Water / Saline at body temp.
    - Air Removed
    - Pt: sitting / holding kidney tray
    - Operator facing / head light
    - Pull Pinna UBL
    - Direction Post – sup. wall
    - Inspect ear after--
    - Dry EAM

- **Complications**
  - Dizziness – Vertigo / Vomiting
Laceration EAM
T.M.Rupture
Syncope -- Vagus nerve stimulation
  - Syringing

- T.M. Perforation / Scar
- Narrow EAM
- Impacted Wax / F.B.
- Recent Temporal Bone Fracture
- H/O Mastoidectomy / M.E. Surgery
- H/O Stapedectomy
- Cardiac Disease

Malignant otitis externa

- The disease starts in the external auditory canal and spreads to adjacent soft tissue, cartilage and bone.
- Although there is often a pre-existing otitis externa, progression to invasive disease is usually rapid
- The pathognomonic sign is the presence of active granulation tissue in the external auditory canal at bone-cartilage junction.
- Potentially lethal infection
- Can lead to cranial nerve palsies, and intracranial complications.

- It occurs primarily in elderly persons
  - Diabetes Mellitus
  - Immunosuppression due to chemotherapy, steroid administration
  - HIV
- Diagnosis
- CBC, ESR
- Blood Sugar
- Swab for C/S
- CT Scan Ear / Temporal bones
- Technetium bone scan
- Gallium scan for bilateral Temporal bone inflammation
- Treatment
- Quinolones I/V and topical
- Long-term antibiotic treatment based on C/S results
- Ear canal debridement

EAR TRAUMA

&

MIDDLE EAR DISEASES

EAR TRAUMA

- External ear
- Middle Ear
- Inner Ear

EXTERNAL EAR:

- Auricular Hematoma
  - Etiology: blunt auricular trauma
  - Potential sequelae
    - Collection of blood
      - Chondronecrosis
      - Contracture
      - Neocartilage: cauliflower ear Wrestler Ear
• **Treatment**
  – Needle aspiration: Inadequate
  – Incision & drainage: Recommended
  – Compressive dressing
  – Antibiotics

• **Complications**
  – Infection / abscess
  – *Pseudomonas* - common
  – May cause liquefacative necrosis

• **CAULIFLOWER EAR:**
  – Common in boxers and wrestlers
    – A blood clot or other fluid collects under the perichondrium.
    – Separates the cartilage from the overlying perichondrium
    – Loss of nutrients
    – Necrosis of cartilage.
    – Formation of fibrous tissue in the overlying skin.

• Sharp Cut Injury to Auricle
  • Repair lacerations < 12 hrs

  • Irrigate aggressively with minimal debridement

  • Meticulous closure

• **Middle Ear Trauma:**
Is usually associated with TM or inner ear trauma unless Iatrogenic

- Ossicular discontinuity
- Facial Nerve Injury
- Chorda tympani Nerve Injury
- Barotrauma to Stapes footplate
- Traumatic TM Perforations
- Penetrating Injuries
- Barotrauma
- Slap on ear
- Penetrating Trauma
- Violence or firearms injury
- Pin, pencil or cotton bud
- Symptoms
  - Pain
  - Dull feeling in ear
  - Hearing loss
- Signs
  - Tympanic Membrane perforation – Linear/irregular
- Treatment
  - Masterly inactivity
  - No Ear drops
  - Observe 3 months
  - Syst. AB if infected
  - TM perforation persists Myringoplasty

- Otitic Barotrauma
  - Pathophysiology
  - Rapid pressure fluctuations within the Middle ear
- Etiology
  - Blast injury – Pressure wave
  - Slap to the Ear
- Otitic Barotrauma
  - Symptoms
    - Dull feeling in ear
    - Pain
    - Hearing loss
    - Perforation of TM
    - Nausea and Vomiting
Findings
- Retraction of TM
- Hemorrhage in TM
- Serous Otitis
- Hemotympanum
- Perforated TM

Treatment:
- Oral Decongestant
- Short Term nasal decongestant
- Antibiotics
- Avoid Diving
- TM perforation present wait for 3-4 months than repair
- Blunt Trauma
- 14-22% of patients with skull fractures sustain a temporal bone fracture.

- Temporal Bone Fractures
  - Longitudinal
  - Transverse
- Longitudinal fractures
- 80% of Temporal Bone Fractures
- 15-20% Facial Nerve involvement
- Conductive or mixed hearing loss
- 80% of CHL resolve spontaneously

TRANSVERSE FRACTURES
- 20% of Temporal Bone Fractures
- 50% Facial Nerve Involvement
- EAC intact
- Sensorineural hearing loss
- Less likely to improve

PHYSICAL EXAMINATION
- Tuning Fork exam
- Pneumatic Otoscopy
- Facial Nerve Examination
- Imaging
- HRCT
- MRI
- Angiography/ MRA
- Symptoms
- Hearing Loss
- Dizziness
- CSF Otorrhea and Rhinorrhea
- Facial Nerve Injuries